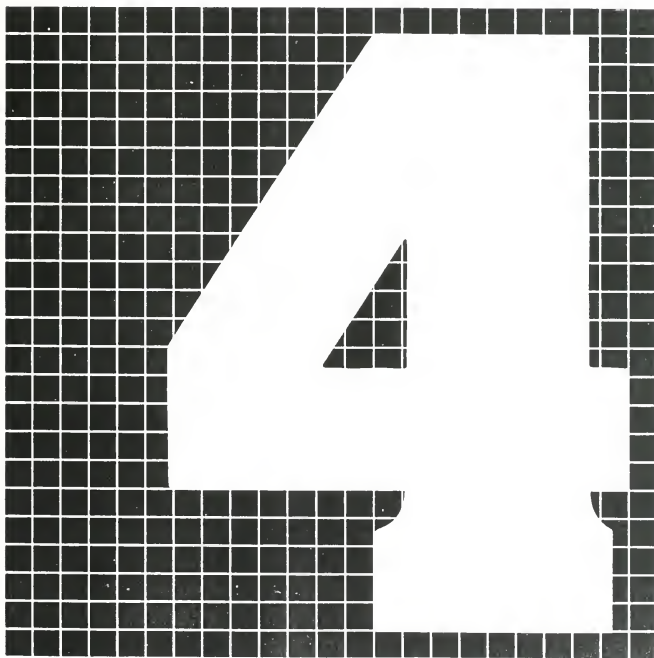


Blueprint for Waste Management in Ontario

Appendix 4

Interim Guideline for the Interpretation
of the Hazardous Waste Definition
(Regulation 309)



Ministry
of the
Environment

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This is one of 11 appendices to the Blueprint for Waste Management. A complete list is presented on the inside of the back cover. For copies of the Blueprint or other appendices, please contact:

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APPENDIX 4 INTERIM GUIDELINE FOR THE INTERPRETATION OF THE HAZARDOUS WASTE DEFINITION

In recent years, the issue of hazardous waste has become one of the most complex and controversial of all waste management concerns. This interim guideline provides a comprehensive interpretation of the existing hazardous waste definition and identifies those wastes that require special management practices. The guideline is currently being applied by the Ministry of the Environment in the field to gain practical experience.

This guideline will undergo continuous review during the period of field testing. Public input obtained through the Blueprint process will also be carefully considered before finalizing the guideline and modifying Regulation 309 (Appendix 6). The schedules involved in this document will also be reviewed in the context of public input received and will become schedules to the regulation.

INTERIM GUIDELINE
FOR THE INTERPRETATION
OF THE
HAZARDOUS WASTE DEFINITION
(REGULATION 309)

MARCH, 1983

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I EXECUTIVE SUMMARY

This guideline provides an interim means of interpreting the existing hazardous waste definition found in Regulation 309. The listing and testing approach closely models the Hazardous Waste Rules adopted by the U.S. Environmental Protection Agency with changes to better serve Ontario. Whenever possible, specific laboratory tests and criteria are assigned for hazard characteristics. When tests or criteria have not been well developed for specific characteristics such as toxicity, the wastes of concern are listed.

Using this approach, a **hazardous waste** is defined as a waste that meets one of the following:

- 1) It is listed as a Hazardous Industrial Waste in Schedule 1,
- 2) It is listed as an Acute Hazardous Waste Chemical or Hazardous Waste Chemical in Schedule 2,
- 3) It contains contaminants listed in Schedule 3 at a concentration greater than 1 ppm,
- 4) It exceeds the criteria assigned to the characteristics of Ignitability, Corrosivity or Reactivity, or is identified as being Pathological.

The above definition does not address the characteristic of leachate toxicity identified in the U.S. definition. The U.S. approach assigns an arbitrary attenuation factor of 100 to the leachate toxicity test that often is not available at landfilling sites. Since attenuation is specific to each site, the leachate toxicity test included in this document has been built into a separate site-specific waste category.

Site-specific waste is defined as waste that is solid and that meets one of the following:

- 1) It is listed as a Site-Specific Industrial Waste in Schedule 4.
- 2) The leachate generated in a laboratory from a representative sample of the waste exceeds 10 times those criteria listed in Schedule 5.

For Site-Specific waste destined for a landfilling site, the site operator or waste generator must demonstrate that the hydrogeologic attenuating capacity of the site is sufficient to reduce the concentrations of contaminants at the end of the landfill property to acceptable levels.

It is intended that this interim guideline will be used by Regional staff to provide assistance to waste generators and site operators as they approach the Ministry regarding the interpretation of the Regulation 309 definition. A full scale review of all wastes and sites to ensure compliance is not being proposed at this time.

The guideline has been introduced at this time to provide an interim period during which experience can be gained. With this approach, it will have been evaluated in the field and any necessary changes made prior to inclusion in a Regulation.

The Ministry's Regional Offices will be responsible for the administration of the guideline. Background information is provided in this document. Specific questions can be directed to the Waste Management Branch by contacting either Hardy Wong or Bob Breeze at 965-9668.

II INTRODUCTION

For some time now, there has been considerable difficulty interpreting the hazardous waste definition included in Regulation 309. The difficulty centres on the ambiguity and non-quantitative nature of hazard characteristics such as "volatility" and qualifying phrases such as "special precautions".

This document has been prepared to provide an interim means of interpreting the existing definition. As such, its purpose is to identify those wastes which, because of the potential hazards they may pose in transportation, handling, processing or disposal, should be subject to special management requirements. Once identified, the wastes can be directed to appropriate processing and disposal locations.

The intent is to provide an interpretation that not only ensures proper management but that is clear, concise and user oriented. With this approach, many decisions regarding the classification of waste will eventually be made by the waste generator to be only confirmed by Ministry Regional personnel prior to waste processing or disposal.

At the outset, two approaches to the interpretation of the existing definition were considered: listing and testing. Using a listing approach, hazardous waste streams and chemicals are identified, listed, and included in a Regulation. This approach requires an on-going review by this Ministry of new streams and chemicals and on-going changes to the Regulation.

A testing approach identifies specific laboratory tests and criteria for each hazard characteristic and assigns the responsibility to perform these tests to the waste generator. Identification of laboratory tests that can accurately quantify characteristics such as "toxicity" is a major drawback.

The chosen approach is a combination of the above: testing whenever possible and listing to fill in the gaps. This approach closely models the definition adopted by the U.S. Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act.

III BACKGROUND INFORMATION

(a) Approach

The proposed interpretation included in this document has, for the most part, been adopted from the U.S. EPA Hazardous Waste Rules. The EPA definition has been the subject of intensive development and review within the United States, and as a result, there already exists extensive background information providing the rationale for test methods and waste listings. To develop an Ontario approach to the problem would not only have required the spending of significant resources to cover the same ground as the U.S. EPA, but would have significantly set back the timing of this document.

To make the interpretation more applicable to Ontario, three major changes have been made to the U.S. definition:

- 1) A class of waste called Site-Specific has been introduced to complement the Hazardous classification. It uses a waste listing and a leachate extraction procedure to compare predicted leachate quality with Drinking Water Quality Criteria. This is followed by a site specific review to ensure that the attenuating capacity and other conditions at the chosen landfilling site are acceptable. The leachate toxicity characteristic has been removed from the hazardous waste definition.
- 2) A pathological characteristic has been added. For clarification, a policy entitled "The Management of Pathological and Institutional Wastes" is available through the Waste Management Branch.
- 3) A list of contaminants of major concern has been introduced.

(b) Legal Implications

This document is only to be used as a means of interpreting the following definition found in Regulation 309:

"Hazardous Waste means waste that requires special precautions in its storage, collection, transportation, treatment or disposal, to prevent damage to persons or property and includes explosive, flammable, volatile, radioactive, toxic and pathological waste."

The above definition will continue to be the legal definition and, as such, will take precedence whenever differences between it and the document are identified. For example, the existing definition defines hazardous waste as those wastes requiring "special precautions" in handling, transportation, treatment or disposal. As a result, waste identified as non-hazardous or Site-Specific by this document, but still requiring special precautions at some point during their management (when compared with municipal waste) will continue to be hazardous until the document is adopted by Regulation.

(c) Effect on Existing Programs

The document has been prepared to enable Regional staff to make decisions for those wastes where a generator or site operator asks for assistance in making a determination. It is not intended, at this time, that Regional staff will review all sites and wastes in a given area to ensure compliance. It should be noted, though, that several sites may be selected for in-depth review to develop background information on the impact of the definition.

The responsibility to perform all laboratory tests and to conduct a hydrogeologic field review of a site rests with the waste generator and the site operator. In keeping with this assignment of responsibility, the Laboratory Services Branch usually will not be asked to conduct analyses listed in the interpretation on a routine basis. Analyses may be required when we do not agree with the results submitted by a generator or when legal action is anticipated.

During this interim period, it is intended to monitor the impact of the approach and make changes as required. To help in the monitoring, a copy of a summary sheet entitled "Hazardous Waste Definition Request" has been attached to this document. A copy of the completed form should be sent to the Waste Management Branch following each waste review.

(d) Interpretation

It is suggested that one or two coordinators be selected in each Region to oversee the administration of the definition. To assist in the administration and interpretation, the Waste Management Branch (Hardy Wong and Bob Breeze at 965-9668) will be available. Background information available through the Waste Management Branch includes the rationale for each of the waste listings, a list of chemical and trade name synonyms, and an interpretation of many of the characteristic narratives. The Branch also maintains contacts with the U.S. EPA for interpretations not available in our files.

(e) Public/Industry Input

It is intended that a public participation program will be conducted for this proposal along with the program proposed for the overall changes to Part V being prepared as part of the Waste Management "Blueprint".

(f) Changes and Improvements

During the interim period covered by this guideline, changes will be ongoing based on the problems encountered in the Regions. These changes will be coordinated by the Waste Management Branch and will include consultations with Regions and other branches of the Ministry.

For changes to the Schedules and waste de-listing, it is anticipated that a Hazardous Waste Listing Committee will be formed. At the outset, the committee will review all proposed changes and make recommendations to the Director of the Waste Management Branch. It is intended that the Regions, the Environmental Approvals Branch, the Hazardous Contaminants and Standards Branch, and the Waste Management Branch will participate on this committee. Members from industry and academic institutions can be considered in the future.

At the present time, the Pesticides Section of the Hazardous Contaminants and Standards Branch is reviewing the pesticides listed in this guideline as commercial chemical products under Schedule 2. It is anticipated that additions and deletions will be made to pesticides included in the schedule to bring it into line with the Pesticides Act listings. Another edition of the guideline will be published when the review is complete and the necessary changes to the schedule have been made. During the interim period, pesticides that are being reviewed should be brought to the attention of the Waste Management Branch on a case-by-case basis.

IV PROPOSED INTERPRETATION

1. The following definitions apply to this interpretation:

"Acute hazardous waste chemical" means a commercial chemical waste having a generic name listed in Schedule 2, Part A unless a declaration is made pursuant to Section 5 that the waste is not an "Acute hazardous waste chemical".

"Commercial chemical waste" means a waste which is a commercial chemical product or manufacturing chemical intermediate of a specified generic name and includes:

- (a) an off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the specified generic name; or
- (b) residues or contaminated material from the clean-up of a spill of a commercial chemical product or manufacturing chemical intermediate of the specified generic name or of an off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the specified generic name; or
- (c) an empty container or the liner from an empty container that contained a commercial chemical product or manufacturing chemical intermediate of the specified generic name, or an off-specification commercial chemical product or manufacturing chemical intermediate which, if it met specifications, would have the specified generic name, or residues or contaminated materials from the clean-up of a spill of any of them, unless the empty container or the liner from the empty container has been triple rinsed,

but, except as specified in subsections (a), (b) or (c), does not include a waste stream or waste material in which material of the specified generic name is present.

"Corrosive (C) Waste" means a waste that has either of the following properties:

- (a) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5 as determined by a pH meter using either the test method specified in the "Test Methods for the Evaluation of Hazardous Waste" or an equivalent test method approved by the Ministry; or
- (b) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm per year at a test temperature of 55°C using test NACE TM-01-69 or an equivalent test approved by the Ministry.

"Empty Container" means a container from which all wastes or other materials have been removed using the removal practices commonly used for the specific materials (such as pumping or pouring) and that contains less than 2.5 cm of material on the bottom of the container.

"Hazardous Industrial Waste" means a generic or specific waste listed in Schedule 1 unless a declaration is made pursuant to Section 5 that the waste is not a "Hazardous Industrial Waste".

"Hazardous Waste Chemical" means a commercial chemical waste having a generic name listed in Schedule 2, Part B unless a declaration is made pursuant to Section 5 that the waste is not a "Hazardous Waste Chemical"

"Ignitable (I) Waste" means a waste that has any of the following properties:

- (a) it is a liquid, other than an aqueous solution containing less than 24% alcohol by volume, and has a flash point less than 60°C (140°F), as determined by the Tag Closed Cup Tester (ASTM D-56-79), the Setaflash Closed Cup Tester, (ASTM D-3243-77 or ASTM D-3278-78), the Pensky-Martens Closed Cup Tester (ASTM D-93-79), or as determined by an equivalent test method approved by the Ministry; or
- (b) it is a solid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that it creates a hazard; or
- (c) it is an ignitable compressed gas (Class 2) as defined by the Ontario Dangerous Goods Transportation Act (1980); or
- (d) it is an oxidizing substance (Class 5) as defined by the above-said Act (1980).

"Leachate Sensitive Waste" means a waste which produces leachate containing any of the contaminants listed in Schedule 5 at a concentration ten (10) times greater than that specified in the Schedule using the "Leachate Extraction Procedure" included in this guideline or an equivalent test method approved by the Ministry.

"Liquid Industrial Waste" means waste from commercial, industrial and manufacturing operations that is transported in a tank or other container and that has a slump of more than 150 mm. using the "Test Method for the Determination of Liquid Industrial Waste, (slump test)", but does not include,

- (a) waste from the operation of a sewage system subject to the provisions of Part VII of the Act or the operation of a holding tank to which regulations made under clause (a) or (b) of subsection 3 of Section 136 of the Act apply;
- (b) waste from the operation of a sewage works subject to the Ontario Water Resources Act where the principal wastes entering the works are from human origin;
- (c) waste that is generated or removed for treatment, storage or disposal in an amount less than 25 litres per month by a generator;
- (d) waste directly discharged by its generator from the site where the waste is generated into municipal sanitary sewage works in accordance with applicable by-laws or into a sewage system, as defined in Part VII of the Act, that is being operated in accordance with the Act;
- (e) "recycled waste" as defined by section XX of Regulation XX;
- (f) waste from food processing operations, including food packing, food preserving, winery, cheese making;
- (g) "inert liquid waste" as defined in section XX of Regulation XX;
- (h) drilling fluids, produced waters, and other wastes associated with the exploration, development, or production of crude oil or natural gas;
- (i) "processed organic waste" as defined in Ontario Regulation 309.

"Pathological (P) Waste" means a waste that is any of the following:

- (a) human anatomical waste including any part of a human body but excluding non-infectious extracted teeth, hair, nail clippings and the like;
- (b) animal anatomical waste which is all or any part of a carcass suspected by a licensed veterinary practitioner to be infected with a communicable disease;
- (c) all other non-anatomical waste infected with communicable disease from any source including public and commercial laboratories and hospitals.

"Reactive (R) Waste" means a waste that has any of the following properties:

- (a) it is normally unstable and readily undergoes violent change without detonating; or

- (b) it reacts violently with water; or
- (c) it forms potentially explosive mixtures with water; or
- (d) when mixed with water, it generates toxic gases, vapours or fumes in a quantity sufficient to present danger to human health or the environment; or
- (e) it is a cyanide or sulphide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapours or fumes in a quantity sufficient to present danger to human health or the environment; or
- (f) it is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement; or
- (g) it is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure; or
- (h) it is a Class I explosive as defined in the Ontario Dangerous Goods Transportation Act, (1980).

"Severely Toxic Waste" means a waste that contains a contaminant listed in Schedule 3 at a concentration greater than 1 part per million.

"Site-Specific Industrial Waste" means a specific solid waste listed in Schedule 4 unless a declaration is made pursuant to Section 5 that the waste is not a "Site-Specific Industrial Waste".

2. **"Hazardous Waste"** means a waste that is a:

- (a) Hazardous Industrial Waste;
- (b) Acute Hazardous Waste Chemical;
- (c) Hazardous Waste Chemical;
- (d) Severely Toxic Waste;
- (e) Ignitable Waste;
- (f) Corrosive Waste;
- (g) Reactive Waste;
- (h) Pathological Waste,

but does not include:

- (i) waste from the operation of a sewage system subject to the provisions of Part VII of the Environmental Protection Act or the operation of a holding tank to which regulations made under clause (a) or (b) of subsection 3 of Section 136 of the Act apply; or
- (j) waste from the operation of a sewage works subject to the Ontario Water Resources Act where the principal wastes entering the works are from human origin; or
- (k) domestic waste; or
- (l) waste that is a Hazardous Industrial Waste, Hazardous Waste Chemical, Ignitable Waste, Corrosive Waste or Reactive Waste and that is produced or generated in a given month or otherwise accumulated by a generator in an amount less than 5 kg ; or
- (m) waste that is an Acute Hazardous Waste Chemical and that is produced or generated in a given month or otherwise accumulated by a generator in an amount less than 1 kg ; or
- (n) an empty container or the liner from an empty container that contained Hazardous Industrial Waste, Hazardous Waste Chemicals, Ignitable Waste, Corrosive Waste or Reactive Waste; or
- (o) an empty liner of less than 20 litres capacity, or one or more liners weighing in total less than 10 kg from empty containers, that contained Acute Hazardous Waste Chemicals, or Severely Toxic Waste; or
- (p) the residues or contaminated materials from the clean- up of a spill of a waste mentioned in Clause (l) involving an amount of waste less than 5 kg; or
- (q) the residues or contaminated materials from the clean-up of a spill of a waste mentioned in Clause (m) involving an amount of waste less than 1 kg.

3. **"Site-Specific Waste"** means:

- (a) Site-Specific Industrial Waste; or
- (b) Leachate Sensitive Waste,

but does not include:

- (c) Hazardous Waste;
- (d) Liquid Industrial Waste;
- (e) waste from the operation of a sewage system subject to the provisions of Part VII of the Environmental Protection Act or the operation of a holding tank to which regulations made under Clause (a) or (b) of subsection 3 of Section 136 of the Act apply; or
- (f) waste from the operation of a sewage works subject to the Ontario Water Resources Act where the principal components of the waste entering the works are from human origin; or
- (g) domestic waste; or
- (h) waste produced or generated in a given month or otherwise accumulated by a generator in an amount less than 5 kg; or
- (i) an empty container or the liner from an empty container that contained Site-Specific Waste; or
- (j) the residues or contaminated materials from the clean-up of a spill of a material mentioned in Clause (h) involving an amount of waste less than 5 kg.

4. Site-Specific Industrial Waste and Leachate Sensitive Waste are acceptable for disposal at any certified landfilling site and may be dealt with at such a site as non-hazardous solid industrial waste provided:

- (a) that the provisional certificate of approval or certificate of approval issued for the landfilling site does not exclude the disposal of the waste by name, class or characteristic;
- (b) that the following information is provided to the Regional Director, ninety days prior to the date that the type of waste is intended to be received at the site:
 - (i) a list of all classes of waste and their estimated volumes including all Site-Specific Wastes that are being received or that are intended to be received at the waste disposal site; and
 - (ii) the results of the leachate analyses for each Site-Specific Waste; and

(iii) a report prepared by a hydrogeologist, demonstrating that the contaminant attenuating capacity of the site is greater than that required to reduce the concentration at the boundary of the landfill property of those contaminants listed in Schedule 5 to twenty-five percent (25%) of the difference between background concentrations and Ontario Drinking Water Quality Criteria.

(iv) such other information as the Regional Director may require.

5. (a) The generator of a Hazardous Industrial Waste, Acute Hazardous Waste Chemical, Hazardous Waste Chemical or Site-Specific Industrial Waste may apply to the Hazardous Waste Listing Committee for a declaration that the specific waste is not a Hazardous Industrial Waste, Acute Hazardous Waste Chemical, Hazardous Waste Chemical, or Site-Specific Industrial Waste, as the case may be.
- (b) The Hazardous Waste Listing Committee may make a declaration referred to in subsection (a) if it is satisfied on reasonable grounds that, as a result of factors specific to the facilities or operations of the generator, the waste in question differs from comparable waste which is a Hazardous Industrial Waste, Acute Hazardous Waste Chemical, Hazardous Waste Chemical, or Site-Specific Industrial Waste as the case may be, and exhibits hazardous properties to an extent less than the criteria for inclusion of such comparable waste as a Hazardous Industrial Waste, Acute Hazardous Waste Chemical, Hazardous Waste Chemical, or Site-Specific Industrial Waste as the case may be.
- (c) The applicant for a declaration shall submit detailed written material in support of the application.
- (d) The applicant may request an opportunity to present his argument to the Committee verbally.
- (e) The Committee may, at any time, request additional information from the applicant.
- (f) The Committee may grant the declaration sought or may give reasons and refuse to grant the declaration sought if information requested under subsection (e) has not been promptly provided or if it is not satisfied that a reasonable case has been made in accordance with subsection (b).

- (g) The decision of the Committee is final.
- (h) The generator of a waste who has been refused a declaration by the Committee, may not apply again to the Committee in respect of the same waste within two years after the date of the refusal without the permission of the Committee.

V ADMINISTRATIVE DIRECTION

Hazardous Waste

This part of the document will discuss the various sections of the interpretation and will provide background behind the rationale for the waste listings and the proposed test protocols.

Schedule 1 is a list of non-specific and specific industrial wastes that are hazardous. For those wastes indicated by an asterisk, only those that are liquids by the Liquid Industrial Waste definition are hazardous. (When solid, these waste streams are Site-Specific). The rationale for Schedule 1 has been included on page 59 of this guideline as Table 1. This table lists the NA numbers and the contaminants of concern that caused the listing. The letter in brackets following the listing indicates the hazardous waste characteristics (i.e. (I) = Ignitability, (T) = Toxicity). Table 1 is of particular importance when a waste de-listing declaration is being considered. The numbering system has been developed by the United Nations for wastes generated within North America (NA).

Schedule 2, Part A & B is a list of commercial chemical products and chemical intermediates that are hazardous. Under this schedule, the commercial chemical product or chemical intermediate (on or off-spec.), the contaminated soil or other spill residues created from the spill of these materials are defined as hazardous waste. Empty containers or inner liners that contained Schedule 2, Part A chemicals are also hazardous waste. If these containers are triple rinsed or otherwise cleaned by methods acceptable to this Ministry, they are not hazardous. A small quantity exemption has been provided for Schedule 2, Part A containers.

The listed chemical does not have to be in a pure form. For a formulated chemical product, where the active ingredient is listed in Schedule 2, the product is considered hazardous. A summary of trade names and synonyms for formulated chemical products is available through the Waste Management Branch.

It should be noted that Schedule 2 is not a list of contaminants that if contained in a waste stream would make the waste hazardous. It refers only to chemical substances which are manufactured or formulated specifically for commercial or manufacturing use and are being discarded or are otherwise being considered for disposal.

The first chemical before the slash (/) on Schedule 2 is consistent with dangerous goods listed in the Ontario Dangerous Goods Transportation Act (DGTA). Names following the slash are synonyms to provide further clarification.

The rationale for dividing Schedule 2 into Parts A and B is as follows:

Part A. Acute Hazardous Waste Chemicals

A waste chemical is listed in Part A if it has been found to be fatal to humans in low doses or, in the absence of data on human toxicity, it has been shown in studies to have an oral LD 50 toxicity (rat) of less than 50 milligrams per kilogram, an inhalation LC 50 toxicity (rat) of less than 2,000 milligrams per cubic metre, or a dermal LD 50 toxicity (rabbit) of less than 200 milligrams per kilogram or is otherwise capable of causing or significantly contributing to an increase in serious irreversible or incapacitating reversible illness.

Part B. Hazardous Waste Chemicals

A waste chemical is listed in Part B if it has been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms unless after considering the following factors, it is concluded that the waste is not capable of posing a substantial present or potential hazard to human health or the environment when it is improperly managed:

- (1) The nature of the toxicity;
- (2) The potential of the chemical or its degradation products to migrate into the environment under the potential types of improper management;
- (3) The persistence of the chemical or its degradation products;
- (4) The potential nature and rate of degradation;
- (5) The potential nature and degree of chemical bioaccumulation in ecosystems;
- (6) The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of the waste chemical;
- (7) Such other factors as may be appropriate.

The numbering system used for Schedule 2 wastes has been developed by the United Nations. In cases where the chemical is only generated in North America, an NA number is used. Where the United Nations has not assigned either a UN or an NA number, A00X (Part A) or B00Y (Part B) has been assigned by the Waste Management Branch.

A list of commercial chemical products or chemical intermediates that are currently under review and that may be added to Schedule 2, Parts A or B has been appended to the document. A chemical included in this list is not a hazardous waste at this time, however, proposals for disposal should be brought to the attention of the Waste Management Branch for review.

Schedule 3 includes a list of contaminants of major concern that, if present in concentrations exceeding 1 ppm would render the waste hazardous. These are substances which can statistically be shown to cause acutely toxic, carcinogenic, teratogenic, hereditary mutagenic or severe debilitating irreversible adverse effects to mammals when exposed by oral, dermal or inhalation routes once or repeatedly to levels of 100 ppb or less. Wastes containing concentrations of these contaminants greater than 1 ppm are defined as hazardous wastes. Because of the concern with these contaminants, there will be no small quantity exemption. Wastes containing concentrations less than 1 ppm and that are of concern are listed as Hazardous Industrial Wastes, Acute Hazardous Waste Chemicals or Hazardous Waste Chemicals. The list of Severely Toxic Contaminants was developed by the State of Michigan to complement the US EPA Hazardous Waste Rules.

Under Section 2 of the interpretation, there are a number of exemptions from the hazardous waste definition. The first two exemptions indicate that sewage and sewage sludge generated from Part VII (EP Act) or OWRA approved sewage works cannot be hazardous waste. In addition, domestic wastes are excluded. Domestic wastes, in this guideline, refer to wastes from individual family units, garbage and refuse produced by commercial operations such as hotels and by industrial operations such as lunch-room waste.

Most waste disposed of in amounts not exceeding 5 kg/month are exempted from the hazardous waste definition through the Section 2 small quantity exemption. The following table details the small quantity exemptions for wastes, containers, container liners and spill residues for Hazardous and Site-Specific wastes.

Waste Type	Waste Qty. (kg./mo.)	Container Size (litre)	Liner Qty. (kg.)	Spill Residues (kg.spilled)
Schedule 1	5	Not Hazardous		5
Schedule 2A	1	20	10	1
Schedule 2B	5	Not Hazardous		5
Schedule 3	0	20	10	0
Schedule 4	5	Not Hazardous		5
I,C,R	5	Not Hazardous		5
Pathological	0	0	0	0
Leachate Sensitive	5	Not Hazardous		5

It is not intended that waste meeting the small quantity exemption can be handled without concern. These materials should be handled, transported and disposed of in accordance with good waste management practices. Where landfilling is a reasonable option and is being considered, wastes should only be taken to large, well operated municipal landfilling sites where the operators are fully aware of the waste's arrival. A guideline for the management of small quantity wastes is to be prepared.

For the purposes of this definition, empty containers have been defined as containers that have been completely drained using the usual method and contain less than 2.5 cm of material.

Perhaps the most important exclusion is the de-listing capability.

The interpretation provides a Hazardous Waste Listing Committee with a mechanism to de-list waste and chemical products from Schedules 1 and 2. In order to obtain an exemption, a chemical manufacturer or waste generator must demonstrate that, as a result of variations in raw materials, processes or other factors, the waste does not meet the characteristics upon which it was originally listed. A de-listing will not result in a change to Schedules 1 or 2 but will provide a legal exclusion or declaration for that particular manufacturer's or generator's waste.

To obtain a de-listing, to Schedule 1, a waste generator must first determine the reasons behind the listing. Table 1 provides a summary of the reasons for Schedule 1 listings. It lists the NA numbers that relate to the Schedule 1 waste streams followed by the contaminant of concern and the characteristic that caused the listing (I=Ignitability, T=Toxicity).

Where the listing was based on a characteristic(s) other than toxicity, the characteristic letter(s) alone is shown. Table 1 is a summary of more detailed information available through the Waste Management Branch.

For a Schedule 2 de-listing, the Waste Management Branch should be contacted on a case-by-case basis.

Ignitability, corrosivity, reactivity and pathologicity are the characteristics that define hazardous wastes. Specific test protocols and detailed narratives have been set down to indicate whether a waste meets a characteristic. A generator needs only perform the tests where, based on his knowledge of the raw materials and the processes involved, he is concerned that the criteria may be exceeded.

The definition section of the interpretation provides the criteria, test methods and narratives behind the characteristics for ignitable, corrosive, reactive, and pathological waste. The laboratory tests and test protocols are, for the most part, self explanatory. The narrative description and references to the DGTA, on the other hand, may require clarification on a case-by-case basis. Where an equivalent test method is proposed, the method should be submitted to the Waste Management Branch for review with the Laboratory Services Branch.

Site-Specific Waste

The site-specific interpretation identifies wastes that are likely to leach toxic constituents into the ground-water, but exhibit none of the other hazardous characteristics. They are more specifically defined as solid industrial wastes listed in Schedule 4 or other solid industrial wastes having the potential to generate a leachate containing concentrations of contaminants that exceed ten times the Ontario Drinking Water Quality Criteria. Drinking Water Quality Criteria are included in this document as Schedule 5.

Schedule 4 is a list of industrial wastes similar to Schedule 1 but where the concern is limited to the potential for ground-water and surface-water leachate contamination by contaminants listed in Schedule 5. The wastes were evaluated and listed by the U.S. Environmental Protection Agency. It should be noted that only solid wastes can be Site-Specific Wastes. When the sludges listed in Schedule 4 are liquid, as defined by the Liquid Industrial Waste definition, they are hazardous wastes and, as a result, have also been listed in Schedule 1.

The exemptions for Site-Specific waste are similar to those provided under the hazardous waste definition, except for the addition of Hazardous and Liquid Industrial Wastes. The small quantity exemptions provided are listed in the table on page 17 of this document.

The definition of Site-Specific Industrial Waste allows the Hazardous Waste Listing Committee to de-list waste from Schedule 4. In all respects a Schedule 4 de-listing is identical to a Schedule 1 de-listing including the use of Table 1.

Section 4 of the interpretation requires that waste generators/operators of waste disposal sites that receive Site-Specific waste provide information that will allow a complete review to be conducted. This review will ensure that the concentration of contaminants at the edge of the landfill property is acceptable. The Section requires that the information be submitted 90 days prior to the reception of each type of Site-Specific waste.

The level of detail of information required in the hydrogeologic report is not stipulated other than to indicate that it must be prepared by a competent hydrogeologist and must be performance oriented. Guidelines are currently being prepared to provide advice to consultants conducting hydrogeologic investigations. The review of this information is to be conducted by Regional staff.

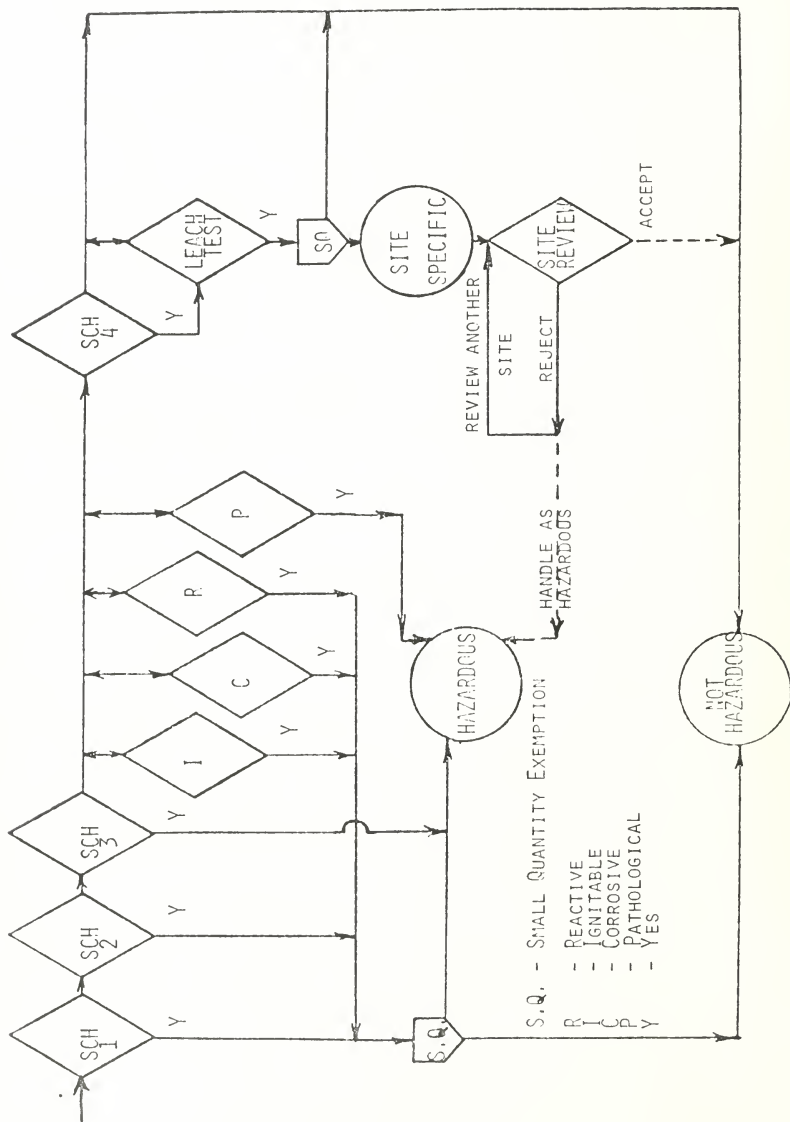
Section 4 of the interpretation also states that a Certificate of Approval held by a waste disposal site is acceptable for the disposal of Site-Specific wastes subject to the terms and conditions included as part of the certificate. As noted earlier, the intention is to re-issue Certificates of Approval with conditions only where the Ministry does not agree with the information submitted that the site is acceptable. These conditions may restrict the wastes that can be received at the site. It is the Waste Management Branch's opinion that this approach will minimize workload.

A guideline will be prepared to provide a basis for the Site-Specific review. Such a review is intended to ensure that only well designed, monitored and operated sites are used for the disposal of Site-Specific wastes.

In addition to the hydrogeologic aspects of the site, the review to be outlined in the guideline will cover the monitoring program, operating and development plan, contingency plan and perpetual care plan. Monitoring programs and leachate collection systems (when included as part of the site design) will be required to be kept in operation following site closure until approval to discontinue operations has been given by the Director. Control over these aspects will be obtained through conditions on the Certificate of Approval. Post-closure funding for sites receiving Site-Specific wastes will be addressed by the Perpetual Care Program being prepared as part of the Waste Management "Blueprint".

In addition to the above, all Site-Specific wastes will require waybills to ensure that disposal is limited to those facilities specifically approved for their reception. Certificates of Approval will be required by condition to be Registered on Title to ensure that subsequent owners are aware of the disposal of Site-Specific waste.

DECISION FLOW CHART





APPENDICES

SCHEDULE 1

Hazardous Waste from Non-specific Sources

Industry and No.

Hazardous waste

Generic:

- NA9301 The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.
- NA9302 The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.
- NA9303 The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.
- NA9304 The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.
- NA9305 The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulphide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.
- NA9306 Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulphuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.
- NA9307 Wastewater treatment sludges from the chemical conversion coating of aluminum
- NA9308 Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions).

- NA9309 Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating bath sludges).
- NA9310 Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions).
- NA9311 Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges).
- NA9312 Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning).
- NA9313 Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges).
- NA9314 Cyanidation wastewater treatment tailing pond sediment from mineral metals recovery operations
- NA9315 Spent cyanide bath solutions from mineral metals recovery operations

Hazardous Waste from Specific Sources

Industry and No.

Hazardous waste

Wood Preservation:

- NA9316 Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol

Inorganic Pigments:

- NA9317 Liquid wastewater treatment sludge from the production of chrome yellow and orange pigments*
- NA9318 Liquid wastewater treatment sludge from the production of molybdate orange pigments*
- NA9319 Liquid wastewater treatment sludge from the production of zinc yellow pigments*

NA9320	Liquid wastewater treatment sludge from the production of chrome green pigments*
NA9321	Liquid wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)*
NA9322	Wastewater treatment sludge from the production of iron blue pigments

Organic Chemicals :

NA9324	Distillation bottoms from the production of acetaldehyde from ethylene
NA9325	Distillation side cuts from the production of acetaldehyde from ethylene
NA9326	Bottom stream from the wastewater stripper in the production of acrylonitrile
NA9327	Bottom stream from the acetonitrile column in the production of acrylonitrile
NA9328	Bottoms from the acetonitrile purification column in the production of acrylonitrile
NA9329	Still bottoms from the distillation of benzyl chloride
NA9330	Heavy ends or distillation residues from the production of carbon tetrachloride
NA9331	Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin
NA9332	Heavy ends from the fractionation column in ethyl chloride production
NA9333	Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production
NA9334	Heavy ends from the distillation of vinyl chloride in vinyl chloride monomer production
NA9335	Aqueous spent antimony catalyst waste from fluoromethanes production
NA9336	Distillation bottom tars from the production of phenol/acetone from cumene
NA9337	Distillation light ends from the production of phthalic anhydride from naphthalene

NA9338	Distillation bottoms from the production of phthalic anhydride from naphthalene
NA9339	Distillation light ends from the production of phthalic anhydride from ortho-xylene
NA9340	Distillation bottoms from the production of phthalic anhydride from ortho-xylene
NA9341	Distillation bottoms from the production of nitrobenzene by the nitration of benzene
NA9342	Stripping still tails from the production of methyl ethyl pyridines
NA9343	Centrifuge and distillation residues from toluene diisocyanate production
NA9344	Spent catalyst from the hydrochlorinator reactor in the production of 1,1,1-trichloroethane
NA9345	Waste from the product steam stripper in the production of 1,1,1-trichloroethane
NA9346	Distillation bottoms from the production of 1,1,1-trichloroethane
NA9347	Heavy ends from the heavy ends column from the production of 1,1,1-trichloroethane
NA9348	Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene
NA9349	Distillation bottoms from aniline production
NA9350	Process residues from aniline extraction from the production of aniline
NA9351	Combined wastewater streams generated from nitrobenzene/aniline production
NA9352	Distillation or fractionation column bottoms from the production of chlorobenzenes
NA9353	Separated aqueous stream from the reactor product washing step in the production of chlorobenzenes

Inorganic Chemicals:

NA9390	Liquid brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used*
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- NA9391 Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production
- NA9392 Liquid wastewater treatment sludge from the mercury cell process in chlorine production*

Pesticides:

- NA9354 Liquid by-product salts generated in the production of MSMA and cacodylic acid*
- NA9355 Wastewater treatment sludge from the production of chlordane
- NA9356 Wastewater and scrub water from the chlorination of cyclopentadiene in the production of chlordane
- NA9357 Filter solids from the filtration of hexachlorocyclopentadiene in the production of chlordane
- NA9358 Vacuum stripper discharge from the chlordane chlorinator in the production of chlordane
- NA9359 Wastewater treatment sludges generated in the production of creosote
- NA9360 Still bottoms from toluene reclamation distillation in the production of disulfoton
- NA9361 Wastewater treatment sludges from the production of disulfoton
- NA9362 Wastewater from the washing and stripping of phorate production
- NA9363 Filter cake from the filtration of diethylphosphorodithioic acid in the production of phorate
- NA9364 Wastewater treatment sludge from the production of phorate
- NA9365 Wastewater treatment sludge from the production of toxaphene
- NA9366 Untreated process wastewater from the production of toxaphene
- NA9367 Heavy ends or distillation residues from the distillation of tetrachlorobenzene in the production of 2, 4, 5-T

NA9368 2,6-Dichlorophenol waste from the production of 2,4-D

NA9369 Untreated wastewater from the production of 2, 4-D

Explosives:

NA9370 Wastewater treatment sludges from the manufacturing and processing of explosives

NA9371 Spent carbon from the treatment of wastewater containing explosives

NA9372 Wastewater treatment sludges from the manufacturing, formulation and loading of lead-based initiating compounds

NA9373 Pink/red water from TNT operations

Petroleum Refining:

NA9374 Dissolved air flotation (DAF) float from the petroleum refining industry

NA9375 Stop oil emulsion solids from the petroleum refining industry

NA9376 Heat exchanger bundle cleaning sludge from the petroleum refining industry

NA9377 API separator sludge from the petroleum refining industry

NA9378 Tank bottoms (leaded) from the petroleum refining industry

Iron & Steel:

NA9380 Liquid emission control sludge from the primary production of steel in electric furnaces*

NA9381 Spent pickle liquor from steel finishing operations

Primary Copper:

NA9393 Liquid acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production*

Primary Lead:

NA9384 Liquid surface impoundment solids contained in and dredged from surface impoundments at primary lead smelting facilities*

Primary Zinc:

NA9385 Liquid sludge from treatment of wastewater and/or acid plant blowdown from primary zinc production*

NA9386 Liquid electrolytic anode slimes/sludges from primary zinc production*

NA9387 Liquid cadmium plant leachate residue (iron oxide) from primary zinc production*

Secondary Lead:

NA9388 Liquid emission control sludge from secondary smelting*

NA9389 Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting

Veterinary Pharmaceuticals:

NA9394 Liquid wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds*

NA9395 Liquid distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds*

Ink Formulation:

NA9393 Liquid solvent washes and sludges, caustic washes and sludges, or water washes and sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead*

Coking:

NA9379 Ammonia still lime sludge from coking operations

NA9397 Decanter tank tar sludge from coking operations

* The Asterisks indicate that only liquid wastes are hazardous wastes. Solid wastes are Site-Specific.

SCHEDULE 2

PART A

ACUTE HAZARDOUS CHEMICALS

UN
Hazardous
Waste

Number Name of Chemical

1541	Acetone cyanohydrin /2-Methylactonitrile or 2-Hydroxy-2-methyl-propanenitrile
2877	1-Acetyl-2-thiourea /N-(aminothioxomethyl)-acetamide
1092	Acrolein, inhibited /2-Propenal
2607	Acrolein dimer, stabilized
1986	Alcohol, Propargyl /2-Propyn-1-OL
2757	Aldicarb /Propanal, 2-Methyl-2-(methylthio)-O-((methylamino) carbonyl) oxime
2761	Aldrin (organochlorine pesticides) /1,2,3,4,10,10,-Hexachloro-1,4,4a,5,8,8a-Hexahydro-1,4:5,8-endo,exo-Dimethanonaphthalene
1098	Allyl alcohol /2-Propen-1-OL
1397	Aluminum phosphide
A001	5-(Aminomethyl)-3-isoxazolol /5-(Aminomethyl)-3(2H)-iso-xalone
2671	Aminopyridines (o-,m-,p-) /4-Pyridineamine
2859	Ammonium metavanadate /Vanadic acid, ammonium salt
1310	Ammonium picrate (R) /2,4,6-Trinitrophenol, ammonium salt
1553	Arsenic acid, liquid
1554	Arsenic acid, solid

1559	Arsenic pentoxide /Arsenic (V) oxide
1561	Arsenic trioxide /Arsenic (III) oxide
1565	Barium cyanide
2337	Benzenethiol /Thiophenol
1738	Benzyl chloride /Chloromethylbenzene
1567	Beryllium, powder /Beryllium dust
1569	Bromoacetone /1-Bromo-2-propanone
1570	Brucine /Strychnidin-10-one, 2,3,-dimethoxy-
1575	Calcium cyanide
1131	Carbon disulfide /Carbon bisulfide
2232	Chloroacetaldehyde
2018	p-Chloroaniline, solid /1-Amino-4-chlorobenzene
2019	p-Chloroaniline, liquid
A002	1-(o-Chlorophenyl)thiourea /2-Chlorophenylthiourea
A003	3-Chloropropionitrile /3-Chloropropanenitrile
1587	Copper cyanides /Cupric cyanides
1588	Cyanides (soluble cyanide salts) not elsewhere specified
1026	Cyanogen
1589	Cyanogen chloride /Chlorine cyanide
2249	Dichlorodimethyl ether, symmetrical /Bischloromethyl ether
NA2810	Dichlorophenylarsine /Phenyldichloroarsine
2761	Dieldrin /1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-6,7-Epoxy-1,4,4a,5,6,7,8,8aOctahydro, endo, exo-
A004	Diethylarsine
2783	Diethyl-p-nitrophenyl phosphate

- 2783 O,O-Diethyl-O-(2-pyrazinyl)phosphorothioate /Phosphorothioic acid, O,O-diethyl-pyrazinyl ester
- A005 Di-isopropylfluorophosphate /Phosphorofluoric acid, bis(1-Methylethyl)ester
- 2783 Dimethoate /Phosphorodithioic acid, O,O,-dimethyl-S-(2(methylamino)-2-oxoethyl) ester
- A006 alpha,alpha-Dimethylphenethylamine /Ethanenamine, 1-1-dimethyl-2-phenyl-
- NA9026 Dinitrocyclohexylphenol /4,6-Dinitro-o-cyclohexyl-phenol
- 1598 Dinitro-o-cresol /4,6-Dinitro-0-cresol and salts and 2,4-dinitro-6-methyl-phenol
- 1320 Dinotrophenol /2,4-Dinitrophenol
- 1599 Dinitrophenol solutions /2,4,-Dinitrophenol solutions
- 0076 Dinitrophenol, dry or wetted with less than 15% water by weight
- 2779 Dinoseb /Phenol, 2,4-dinitro-6-(1-methylpropyl-
- 2783 Disulfoton /O,O-Diethyl-S-(2-(ethylthio)ethyl) phosphorodithioate
- A007 2,4,-Dithiobiuret /Thioimidodicarbonic diamide
- 2783 Dithiopyrophosphoric acid, tetraethyl ester /Sulfotep
- 2761 Endosulfan /5-Norbornene-2-3-dimethanol, 1,4,5,6,7,7,-hexachloro, cyclic sulfite
- 2773/
2774 Endothall (See phtalimides)
- 2761 Endrin /1,4:5,8-Dimethanonaphtalene,1,2,3,4,10,10-Hexachloro-6,7-Epoxy-1,4,4a,5,6,7,8,8a-Octahydro-endo,endo
- A008 Epinephrine /1,2-Benzenediol, 4(1-hydroxy-2(methylamino)ethyl-)
- 1185 Ethyleneimine, inhibited /Aziridine
- 2783 Famphur /Phosphorothioic acid, O,O-dimethyl-O-(p-((dimethylamino)sulfonyl)phenyl) ester
- A009 Ferric cyanide
- 1045 Fluorine, compressed

NA9192	Fluorine, cryogenic liquid
2588	2-Fluoroacetamide
2761	Heptachlor /4,7-Methanoindene, 1,4,5,6,7,8,8-Heptachloro-3a,4,7,7a-tetra-hydro-
2761	1,4,5,6,7,7,-Hexachloro-cyclic-5-norbornene-2,3-dimethanol sulfite /Endosulfan
2761	Hexachlorohexahydro-exo,exo,-dimethanonaphthalene /Organo chlorine pesticides
1611	Hexaethyl tetraphosphate
1612	Hexaethyl tetraphosphate and compressed gas mixtures
NA2783	Hexaethyl tetraphosphate mixture, dry (containing not more than 2% hexaethyl tetra-phosphate). Also liquids containing not more than 25% of hexaethyl tetraphosphate
1051	Hydrocyanic acid, anhydrous, stabilized /Hydrogen cyanide
1614	Hydrogen cyanide, anhydrous, stabilized, absorbed in a porous inert material.
2199	Hydrogen phosphide /Phosphine
2761	Isodrin /1,2,3,4,10,10-Hexachloro 1,4,4a,5,8,8a-hexahydro-1,4:5,8 endo,endo-dimethanonaphthalene
1649	Lead tetraethyl /Tetraethyl plumbane
0135	Mercury fulminate (R,T) /Fulmic acid, mercury (III) salt; wetted with not less than 20%, by weight or mixture of alcohol and water.
2757	Methomyl /Acetimidic acid, thio-N-((Methylcarbamoyl)oxy)-methyl ester
1244	Methyl hydrazine
2480	Methyl isocyanate /Isocyanic acid, methylester, dry or solutions
1651	Naphthylthiourea /Naphthalenylthiourea
1259	Nickel carbonyl (also Nickel tetracarbonyl)
1653	Nickel cyanide /Nickel (II) cyanide
1654	Nicotine

1655	Nicotine compounds, n.o.s /Pyridine, (S)-3-(1-methyl-2-pyrrolidinyl-,) and salts
1660	Nitric oxide
1661	Nitroanilines (o-,m-p-)
1067	Nitrogen dioxide /Nitrogen (II) oxide, liquefied
1067	Nitrogen peroxide, liquid
1067	Nitrogen tetroxide /Nitrogen (IV) oxide
1975	Nitrogen tetroxide and nitric oxide mixtures
0144	Nitroglycerine (R), spirit of, with more than 1% but not more than 10% nitroglycerin in solution in alcohol
1204	Nitroglycerin (R), solution in alcohol with not more than 1% nitrogen
A010	N-Nitrosodimethylamine
A011	N-Nitrosomethylvinylamine /N-methyl-N-nitrosoethaneamine
2783	Octamethylpyrophosphoramidate /Octamethyldiphosphoramidate
2471	Osmium tetroxide
2773	7-Oxabicyclo (2.2.1) heptane-2,3-dicarboxylic acid /Endothall
2783	Parathion /O,O-Diethyl O-(p-Nitrophenyl) phosphorothioate
2783	Parathion-methyl /O,O-Dimethyl O-p-Nitrophenyl phosphorothioate
NA2810	Phenyl dichloroarsine /Dichlorophenylarsine
1674	Phenylmercuric acetate /Aceto-o-phenylmercury
2767	Phenylurea pesticides, N-Phenylthiourea /1-phenyl-2-thiourea
2773	Phthalimide derivative pesticide, Endothall, dry
2774	Phthalimide derivative pesticide, Endothall, liquid
2783	Phorate /phosphorothioic acid, O,O-diethyl-S-(ethylthio)methyl ester
1076	Phosgene /Carbonyl chloride

2199	Phosphine
1680	Potassium cyanide
A012	Potassium silver cyanide /Silver potassium cyanide
2402	Propionitrile /Ethyl cyanide
1921	Propyleneimine, inhibited /1,2-Propyleneimine
A013	Selenourea /Carbamimido-selenoic acid
1684	Silver cyanide
1687	Sodium azide
1689	Sodium cyanide
2629	Sodium fluoroacetate /Fluoroacetic acid, sodium salt
A014	Strontium sulfide
1692	Strychnine salts /Strychnidin-10-one, and salts
2780	(Substituted nitrophenol pesticide flammable liquid, n.o.s.)
2783	Sulfotep /Thiopyrophosphoric acid, tetraethyl ester
1703	Tetraethyl dithiopyrophosphate and gases, in solution
1703	Tetraethyl dithiopyrophosphate and gases, mixtures
1704	Tetraethyl dithiopyrophosphate
1704	Tetraethyl dithiopyrophosphate, dry, liquid or mixture
1705	Tetraethyl pyrophosphate and compressed gas mixtures
2783	Tetraethyl pyrophosphate, dry or liquid, and mixtures
1510	Tetranitromethane (R)
1611	Tetraphosphoric acid, hexaethyl ester /see Hexaethyl tetraphosphate
1707	Thallium compounds /Thallic oxide, Thallium peroxide, Thallium selenite, and Thallium(1)sulfate
A015	Thiofanox /3,3-dimethyl-1(methylthio)-2-butanone, O((methylamino) carbonyl) oxime

A016	Thiosemicarbazide /N-Aminothiurea
2761	Trichloromethanethiol
2761	Toxaphene /Octachlorocamphene
2862	Vanadium pentoxide, non-fused form /Vanadium (V) oxide
2769	Warfarin /3-(alpha-Acetylbenzy)-4-hydroxycoumarin and salts
1713	Zinc cyanide
1714	Zinc phosphide (R,T)

SCHEDULE 2

PART B

LIST OF MAINLY TOXIC CHEMICALS

UN
Hazardous
Waste

Number Name of Chemical

1089	Acetaldehyde (I) /Ethanal
1090	Acetone (I) /2-Propanone
1648	Acetonitrile (I, T) /Ethanenitrile or Methyl cyanide
B001	Acetophenone /Methylphenyl ketone or 1-Phenylethanone
B002	2-Acetylaminofluorene /N-Fluorene-2-YL-Acetamide
1717	Acetyl chloride (C, T) /Ethanoyl chloride
2074	Acrylamide /2-Propenamide
2218	Acrylic acid (I) inhibited /2-Propenoic acid
1093	Acrylonitrile, inhibited /2-Propenenitrile
B003	Amitrole /1H-1,2,4-Triazole-s-3-amino
1547	Aniline (I, T) /Benzenamine (I, T)
B004	Auramine /4,4'-(Imidocarbonyl) bis (N,N,Dimethylaniline)
B005	Azaserine /Serine diazoacetate (ester)
B006	Benz(c)acridine /3,4-Benzacridine
1886	Benzal chloride /Dichloromethyl benzene
B007	Benz(a)anthracene /1,2-Benzoanthracene
1114	Benzene (I, T) /Benzol
2225	Benzenesulfonyl chloride (C, R) /Benzenesulfonic acid chloride

1885	Benzidine /1,1'-Biphenyl-4,4'-diamine
B008	1,2-Benzisothiazolin-3-one, 1,1-dioxide /saccharin and salts
B009	Benzo(a)pyrene /3,4-Benzopyrene
2587	p-Benzoquinone /1,4-Cyclohexadienedione
2226	Benzotrichloride (C,R,T) /Trichloromethylbenzene
B010	Bis(2-chloroethoxy)methane /Ethane, 1,1'-(methylenebis(oxy)bis(2-chloro)
B011	N,N-Bis(2-chloromethyl)-2-naphthylamine /Chlornaphazine
B012	Bis(2-chloroisopropyl)ether /Propane, 2,2'-oxybis(2-chloro-)
B013	Bis(2-ethylhexyl) phthalate /1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)ester
1062	Bromomethane /Methylbromide
B014	4-Bromophenyl phenyl ether /Benzene, 1-bromo-4-phenoxy-
1193	2-Butanone (I,T) (see Ethyl methyl ketone)
2550	2-Butanone peroxide (R,T) (see Ethyl methyl ketone peroxide)
1120	n-Butyl alcohol (I) /1-Butanol
1572	Cacodylic acid /Hydroxydimethyl arsine oxide
NA9096	Calcium chromate /Cromic acid, calcium salt
1671	Carbolic acid (see Phenol)
1846	Carbon tetrachloride /Tetrachloromethane
2417	Carbonyl fluoride (R,T) /Carbon oxyfluoride
2075	Chloral (anhydrous, inhibited) /Trichloroacetaldehyde
B015	Chlorambucil /4-(p-Bis(2-Chloroethyl)-aminophenyl)butric acid
2761	Chlordane, technical, dry /4,7-Methanoindan, 1,2,4,5,6,7,8,8-octachloro-3a,4,7,7a-tetrahydro-
2762	Chlordane, liquid
2761	Chlordecone (see Kepone)

1134	Chlorobenzene
2669	Chlorocresols /4-Chloro-m-cresol or 4-Chloro-3-methylphenol
B016	1-Chloro-2,3-epoxypropene /2-chloromethyloxirane
B017	Chloroethyl vinyl ether /2-Chloroethoxyethene
1888	Chloroform /Trichloromethane
B018	2-Chloronaphthalene /beta-Chloronaphthalene
2020	Chlorophenols, solid E.g. 2,4,5-Trichlorophenol, 2,4,6-Trichlorophenol, and 2,3,4,6-Tetrachlorophenol
2021	Chlorophenols, liquid
B019	4-Chloro-o-toluidine hydrochloride /4-Chloro-2-methyl-benzenamine
B020	Chrysene /1,2-Benzphenanthrene
2810	Cresote, poisonous liquids
1334	Cresote salts
1993	Cresote, coal tar
1993	Cresote, oil
2076	Cresols (o-, m-, and p-)
1143	Crotonaldehyde, stabilized /2-Butenal
2022	Cresylic acid
1981	Cumene (I) /Isopropylbenzene or 1-Methyl ethyl benzene
1889	Cyanogen bromide /Bromine cyanide
1145	Cyclohexane (I) /Hexahydrobenzene
1915	Cyclohexanone (I)
B021	Cyclophosphamide /2H-1,3,2-Oxazaphosphorine, 2-(bis(2-chloro-ethyl)amino)tetrahydro-, oxide 2-
B022	244-D, salts and esters /N-(N-Methyl-4-piperidino)-10H-pyrido (3,2-b)(1,4)-Benzothiazine-10-Carboxamide hydrochloride

B023	Daunomycin /5,12-Naphthacene-dione, (8S-cis)-8-acetyl-10-(3-amino-2,3,6-trideoxy-alpha-L-lyxohexopyranosyl)oxyl)-7,8,9,10-tetrahydro-6,8,11-trihydroxy-1-methoxy-
2761	Dichlorodiphenyldichloroethane /1,1-Dichloro-2,2-bis(p-Chlorophenyl) ethane
2761	Dichlorodiphenyltrichloroethane
2588	Diallate /S-(2,3-Dichloroallyl)diisopropylthiocarbamate
2029	Diamine (R, T) see Hydrazine
B024	Dibenz(a,h)anthracene /1,2,5,8-Dibenzanthracene
B025	Dibenzo(a,i)pyrene /1,2,7,8-Dibenzopyrene
B026	1,2-Dibromo-3-chloropropane
1605	1,2-Dibromoethane /Ethylene dibromide
2664	Dibromomethane /Methylene bromide
B027	Di-n-butyl phthalate /1,2-Benzenedicarboxylic acid, dibutyl ester)
1591	1,2-Dichlorobenzene, liquid
1591	Dichlorobenzene (o- and m-), liquid, E.g. 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, and 1,4-Dichlorobenzene
1592	p-Dichlorobenzene, solid
B028	3,3'-Dichlorobenzidine /1,1'-Biphenyl-4,4'-diamine, 3,3'-dichloro-
1993	1,4-Dichloro-2-butene (1,T)
1028	Dichlorodifluoromethane
2362	1,1-Dichloroethane
1184	1,2-Dichloroethane /Ethylene dichloride
1916	Dichloroethyl ether /1,1'-Oxybis(2-chloroethane)
1150	1,1-Dichloroethylene /1,1-Dichloroethene
1150	1,2-trans-dichloroethene /1,2-Dichloroethylene
1593	Dichloromethane /Methylene chloride

2020	2,4-Dichlorophenol, solid /Chlorophenols, solid
2021	2,4 Dichlorophenol, liquid /Chlorophenols, liquid
2020	2,6-Dichlorophenol, solid /Chlorophenols, solid
2021	2,6-Dichlorophenol, liquid /Chlorophenols, liquid
NA2765	2,4-Dichlorophenoxyacetic acid, salts and esters
1279	1,2-Dichloropropane /Propylene dichloride
2047	1,3-Dichloropropene (and propylene dichloride mixture)
B029	1,2,3,4-Diepoxybutane (I,T)
B030	1,2-Diethylhydrazine /N,N-Diethylhydrazine
B031	0,0-Diethyl-S-methyl ester of phosphorodithioic acid
B032	Diethyl phthalate /1,2-Benzenedicarboxylic acid, diethyl ester
B033	Diethylstilbestrol /4,4'-Stilbenediol, alpha, alpha-diethyl-
B034	Dihydrosafrole /Benzene,1,2-methylenedioxy-4-propyl-
B035	3,3'-Dimethoxybenzidine /(1,1'-Biphenyl)-4,4-diamine, 3,3-dimethoxy-
1032	Dimethylamine (I), anhydrous /N-Methyl-methanamino
1160	Dimethylamine, aqueous solution
B036	p-Dimethylaminoazobenzene /Benzenamine,N,N,-dimethyl-4-phenylazo-
B037	7,12-Dimethylbenz(a)anthracene /7,12-Dimethyl-1,2,benzanthracene
B038	3,3'-Dimethylbenzidine /(1,1'-Biphenyl)-4,4'-diamine, 3,3-dimethyl-
B039	alpha,alpha-Dimethylbenzylhydroperoxide (R) /1-Methyl-1-phenylethyl-hydroperoxide
2262	Dimethylcarbamoyl chloride
2382	1,1-Dimethylhydrazine, symmetrical
1163	1,2-Dimethylhydrazine, unsymmetrical

B040	2,4-Dimethylphenol
B041	Dimethyl phthalate /1,2-Benzenedicarboxylic acid, dimethyl ester
1595	Dimethyl sulfate /Sulfuric acid, dimethyl ester
1320	2,4-Dinitrophenol, wetted with not less than 15% water by weight
1599	2,4-Dinitrophenol solution
0076	2,4-Dinitrophenol, dry, or containing less than 15% water by weight
1600	2,4-Dinitrotoluene, liquid /Benzene,1-methyl-2,4-dinitro-
2038	2,4-Dinitrotoluene, solid /Benzene,1-methyl-2,4-dinitro-
2038	2,6-Dinitrotoluene, solid /Benzene,1-Methyl-2,6-dinitro
1600	2,6-Dinitrotoluene, liquid /Benzene,1-Methyl-2,6-dinitro
B042	Di-n-octyl phthalate /1,2-Benzenedicarboxylic acid, di-n-octyl ester
1165	1,4-Dioxane /1,4-Diethylene dioxide
B043	1,2-Diphenylhydrazine
2383	Dipropylamine (I) /1-Propanamine, N-propyl-
B044	Di-N-propylnitrosamine
1173	Ethyl acetate (I) /Acetic acid, ethyl ester (I)
1917	Ethyl acrylate (I) inhibited /2-Propenoic acid, ethyl ester
2761	Ethyl-4,4'-dichlorobenzilate /Benzenoacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha hydroxy, ethyl ester
2772	Ethylenebisdithiocarbamic acid /1,2-EthanediyI biscarbamoethioic acid
1184	Ethylene dichloride
1040	Ethylene oxide(I,T) /Oxirane
2877	Ethylene thiourea /2-Imidazolidinethione
1155	Ethyl ether (I) /1,1'-oxybisethane

2277	Ethylmethacrylate, inhibited /2-Propenoic acid, 2-methyl; ethyl ester
B045	Ethyl methanesulfonate /Methanesulfonic acid, ethylester
1193	Ethyl methyl ketone (l,T) /Methyl ethyl ketone or Butanone
B046	Ferric dextran /Iron dextran
1993	Flammable liquids; Dichlorobutene
B047	Fluoranthene /Benzo (j,k) fluorene
1198	Formaldehyde solution (Formalin) /Methylene oxide
2209	Formaldehyde, solution (Formalin) /Methylene oxide
1779	Formic acid (C,T) /Methanoic acid
2389	Furan (I) /Furfuran
1199	Furfural (I) /2-Furancarboxaldehyde
2622	Glycidylaldehyde /Glycidaldehyde or 2,3,-Epoxy-1-propanol)
2729	Hexachlorobenzene
2279	Hexachlorobutadiene /1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
2761	Hexachlorocyclohexane (gamma isomer) /Lindane
2646	Hexachlorocyclopentadiene /1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-
NA9037	Hexachloroethane /1,1,1,2,2,2-hexachloroethane
2875	Hexachlorophene /2,2'-Methylenebis-3,4,6-trichlorophenol
B048	Hexachloropropene /1-Propene, 1,1,2,3,3,3-hexachloro
2029	Hydrazine anhydrous (R,T) /Diamine (R,T)
2030	Hydrazine (R,T) solution, with not more than 64% hydrazine by weight
1052	Hydrofluoric acid (C,T), anhydrous /Hydrogen fluoride
1790	Hydrofluoric acid, solution (C,T)
1053	Hydrogen sulfide, liquefied /Sulfur hydride

1671	Hydroxybenzene (see Phenol)
B049	Indeno(1,2,3-cd)pyrene /1,10-(1,2-Phenyl)pyrene
1212	Isobutanol (I,T) /Isobutyl alcohol or 1-Propanol-2-methyl
B050	Isosafrole /Benzene, 1,2-methylenedioxy-4-propenyl-
2761	Kepone /Decachlorooctahydro-1,3,4-Methene-2H-cyclobutyl(c,d)-pentalen-2-one
B051	Lasiocarpine
1616	Lead acetate /Acetic acid, lead salt
2291	Lead compounds, soluble (Lead phosphate and Lead subacetate)
2215	Maleic anhydride /2,5-Furandione
B052	Maleic hydrazide /1,2-Dihydro-3,6-pyridazinedione
2647	Malononitrile /Propanedinitrile
2550	Methyl ethyl ketone (MEK) peroxides (R,T)
2127	MEK Peroxide, with not more than 60% peroxide
2563	MEK Peroxide, with not more than 50% peroxide
B053	Melphalan /3-(p-(Bis(2-chloroethyl)amino)phenyl)-L-alanine
2809	Mercury (I,T)
B054	Methacrylonitrile (I,T) /2-Methyl-2-propenenitrile
1064	Methanethiol (I,T) /Thiomethanol
1230	Methanol (I) /Methyl alcohol
B055	Methapyrilene /2-((Dimethylamino ethyl)-2-thenylaminopyridine)
NA2761	Methoxychlor /1,1,1-Trichloro-2,2-bis(p-methoxyphenyl)ethane
1063	Methylchloride (I,T) /Chloromethane
1238	Methyl chlorocarbonate (I,T) /Carbonochloridic acid methyl ester
2831	Methyl chloroform /1,1,1-Trichloroethane
1239	Methylchloromethyl ether /Chloromethoxymethane

B056	3-Methylcholanthrene /Benz(j)aceanthrylene, 1,2-dihydro-3-methyl-
1648	Methyl cyanide (I,T) /Cyanomethane
B057	4,4'-Methylene-bis-(2-chloroaniline) (Benzenamine, 4,4'methylene-bis(2-chloro))
1193	Methyl ethyl ketone (I,T)
2644	Methyl iodide (Iodomethane)
1245	Methyl isobutyl ketone (I) (4-Methyl-2-pentanone)
1247	Methyl methacrylate monomer, inhibited (I,T) (2-Propenoic acid, 2-methyl, methyl ester)
B058	N-Methyl-N'-nitro-N-nitrosoguanidine
B059	Methylthiouracil /4(1H)-Pyrimidione, 2,3-dihydro-6-methyl-2-thioxo-
B060	Mitomycin C /6-Amino-1,1a,2,8,8a, 8b-hexahydro-8-(hydroxymethyl) 8a-methoxy-5-methylcarbamate azirino(2',3':3,4) pyrrolo(1,2-a) indole-4, 7-dione (ester)
1334	Naphthalene, crude
2304	Naphthalen, molten
B061	1,4-Naphthoquinone /1,4-Naphthalenedione
2077	alpha-Naphthylamine /1-Naphthylamine
1650	beta-Naphthylamine /2-Naphthylamine
1662	Nitrobenzene (I,T) /Nitrobenzol
1663	Nitrophenols (o-,m-,p-), E.g. 4-Nitrophenol
2608	Nitropropanes (I) E.g. 2-Nitropropane
B062	N-Nitrosodi-n-butylamine /1-Butadiene, N-butyl-N-nitroso-
B063	N-Nitrosodiethanolamine /Ethanol, 2,2'(nitroso-imino)bis-
B064	N-Nitrosodiethylamine /Ethanamine, N-ethyl-N-nitroso-
B065	N-Nitrosodi-N-propylamine

B066	N-Nitroso-N-ethylurea /Carbamide, N-ethyl-N-nitroso-
B067	N-Nitroso-N-methylurea /Carbamide, N-methyl-N-nitroso-
B068	N-Nitroso-N-methylurethane /Carbamic acid, methylnitroso-ethyl ester
B069	N-Nitrosopiperidine /Pyridine, hexahydro-N-nitroso-
B070	N-Nitrosopyrrolidine /Pyrrolo, tetrahydro-n-nitroso-
2660	Nitrotoluidines, E.g. 5-Nitro-o-toluidine /Benzenamine, 2-methyl-5-nitro-
1264	Paraldehyde
B071	Pentachlorobenzene
1669	Pentachloroethane
B072	Pentachloronitrobenzene
2761	Pentachlorophenol (organochlorine pesticide)
B073	1,3-Pentadiene (I) /1-Methylbutadiene
B074	Phenacetin /N-(4-Ethoxyphenyl)acetamide
1671	Phenol, solid
2312	Phenol, molten
2821	Phenol solution
2765	Phenoxypesticides, E.g. 2,4,5-Trichlorophenoxypropionic acid or 2,4,5-Trichlorophenoxyacetic acid
1340	Phosphorus pentasulphide (R), Phosphorous sulfide(R)
2214	Phthalic anhydride /1,2-Benzenedicarboxylic acid anhydride
2313	Pirolines /2-Picoline or 2-Methylpyridine
B075	Pronamide /3,5-Dichloro-N-(1,1-dimethyl-2-propynyl) benzamide
B076	1,3-Propane sultone /1,2-oxathiolane, 2,2-dioxide
1277	Propylamine /n-Propylamine (T,T) or 1-Propanamine
1282	Pyridine

B077	Reserpine /Yohimban-16-carboxyl acid, 11,17-dimethoxy-18((3,4,5-trimethoxybenzoyl)oxy)-, methyl ester
2876	Resorcinol /1,3-Benzenediol
B078	Saccharin and salts /1,2-Benzisothiazolin-3-one,1,1-dioxide
B079	Safrole /Benzene, 1,2-methylenedioxy-4-allyl-
NA2811	Selenious acid /Selenium dioxide
2657	Selenium disulphide (R,T) /Selenium sulfide (R,T) or sulfur selenide
B080	Streptozotocin /2-Deoxy-2-(3-Methyl-3-Nitrosoureido)-D-glucopyranose
B081	1,2,4,5,-Tetrachlorobenzene
1702	Tetrachloroethane /1,1,2-Tetrachloroethane or 1,1,2,2-Tetrachloroethane
1897	Tetrachloroethylene /1,1,2,2-Tetrachloroethene or Perchloroethylene
2056	Tetrahydrofuran (I)
1707	Thallium compounds, E.g. Thallium(I) acetate, Thallium (I) carbonate, or Thallium (I) chloride
2727	Thallium (I) nitrate
B082	Thioacetamide /Ethanethioamide
2877	Thiourea /Thiocarbamide
2771	Thiram /Bis(dimethylthiocarbomoyl)disulfide
1294	Toluene /Methylbenzene
1709	2,4-Toluylenediamine /Toluenediamine or Diaminotoluene
1708	o-Toluidine hydrochloride /Benzenamine, 2-methyl, hydrochloride
2078	Toluene diisocyanate (R,T) /Benzene, 1,3-diisocyanatomethyl-
2761	Toxaphene /Octachlorocamphene
B083	Tribromomethane /Bromoform

2831	1,1,1-Trichloroethane
2831	1,1,2-Trichloroethane
1710	Trichloroethylene /Trichloroethene
B084	Trichlorofluoromethane /Trichloromonofluoromethane
0214	Trinitrobenzene (R,T), E.g. 1,3,5-Trinitrobenzene dry or wetted with less than 30% water by weight
1354	Trinitrobenzene, E.g. 1,3,5-Trinitrobenzene wetted with not less than 30% water, by weight
B085	Tris(2,3-dibromopropyl) phosphate /1-Propanol,2,3-dibromophosphate
B086	Trypan blue /2,7-Naphtalenedisulfonic acid, 3,3'-((3,3'-dimethyl-4,4'-biphenylene) bis(Azo))bis(5-amino-4-hydroxy-)tetrasodium salt
B087	Uracil mustard /5-(Bis(2-Chloroethyl)amino)uracil
B088	Urethan /Carbamic acid, ethyl ester
1086	Vinyl chloride, inhibited /Chloroethene
1307	Xylene (I,T) /Dimethylbenzene

SCHEDULE 3

Severely Toxic Contaminants

<u>Hazardous Waste Number</u>	<u>Contaminant</u>
MOO1	Aflatoxin
MOO2	2,3,7,8-Tetrachlorodibenzo-p-dioxin
MOO3	1,2,3,7,8,-Pentachlorodibenzo-p-dioxin
MOO4	1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin
MOO5	1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin
MOO6	1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin
MOO7	2,3,7,8-Tetrachlorodibenzo furan

SCHEDULE 4

Industry and No.

Site Specific waste

Inorganic Pigments:

NA9317	Solid wastewater treatment sludge from the production of chrome yellow and orange pigments
NA9318	Solid wastewater treatment sludge from the production of molybdate orange pigments
NA9319	Solid wastewater treatment sludge from the production of zinc yellow pigments
NA9320	Solid wastewater treatment sludge from the production of chrome green pigments
NA9321	Solid wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated)
NA9323	Solid oven residue from the production of chrome oxide green pigments

Inorganic Chemicals:

NA9390	Solid brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used
NA9392	Solid wastewater treatment sludge from the mercury cell process in chlorine production

Pesticides:

NA9354	Solid by-product salts generated in the production of MSMA and cacodylic acid
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Iron & Steel:

NA9380	Solid emission control dust/sludge from the primary production of steel in electric furnaces
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Primary Copper:

NA9383	Solid acid plant blowdown slurry/sludge resulting from the thickening of blowdown slurry from primary copper production
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Primary Lead:

NA9384 Solid surface impoundment sludge contained in and dredged from surface impoundments at primary lead smelting facilities

Primary Zinc:

NA9385 Solid sludge from treatment of wastewater and/or acid plant blowdown from primary zinc production

NA9386 Solid electrolytic anode slimes/sludges from primary zinc production

NA9387 Solid cadmium plant leachate residue (iron oxide) from primary zinc production

Secondary Lead:

NA9388 Solid emission control dust/sludge from secondary lead smelting

Veterinary Pharmaceuticals:

NA9394 Solid wastewater treatment generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds

NA9395 Solid distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

NA9396 Solid residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds

Ink Formulation:

NA9393 Solid solvent sludges, caustic sludges, or water sludges from cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead

SCHEDULE 5

Ontario Drinking Water
Quality Criteria

MOE Hazardous Waste Number	Contaminant	Maximum Concentration (milligrams per litre)
S001	2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid)	.01
S002	2,4-D (2,4-Dichlorophenoxyacetic acid)	.1
S003	Aldrin/Dieldrin	.0007
S004	Arsenic	.05
S005	Barium	1.0
S006	Boron	5.0
S007	Cadmium	.005
S008	Carbaryl	.07
S009	Chlordane	.007
S010	Chromium	.05
S011	Cyanide (free)	.2
S012	DDT	.03
S013	Diazinon	.014
S014	Endrin (1,2,3,4,10,10- hexachloro-1,7-expoxy 1,4,4a,5,6,7,8,8a- octahydro-1,4-endo- 5,8-dimethano naphthalene)	.0002
S015	Fluoride	2.4
S016	Heptachlor & Heptachlorepoide	.003
S017	Lead	.05

S018	Lindane (1,2,3,5,6- hexachlorocyclohexane, gamma isomer)	.004
S019	Mercury	.001
S020	Methoxychlor (1,1,1-Trichloro-2, 2-bis [p-methoxyphenyl] ethane)	.1
S021	Methyl Parathion	.007
S022	Nitrate & Nitrite	10.
S023	Nitrioltriacetic acid	.05
S024	Nitrite	1.0
S025	PCB's	.003
S026	Parathion	.035
S027	Selenium	.01
S028	Silver	.05
S029	Toxaphene (C ₁₀ H ₁₀ Cl ₅ . Technical chlorinated camphene, 67-69 percent chlorine)	.005
S030	Trihalomethanes	.35
S031	Uranium	.02

**(f) Interim Test Methods for the Evaluation of Site-Specific Waste -
Leachate Extraction Procedure**

This procedure is to be used to determine whether the concentration of contaminants in leachate from a specific waste exceeds ten times those values set down in Schedule 5 of this Regulation. Waste, in which the concentration of contaminants is less than ten times those values shown in Schedule 5, is to be considered non-hazardous industrial waste. Waste, in which the values exceed those shown in Schedule 5 by a factor of ten, is to be considered Site-Specific Waste and as such must comply with the requirements set forth in the interpretation.

This test method is to be used to evaluate wastes that are destined for disposal in a municipal landfill (co-disposal) or in a private industrial landfill (mono-fill) where there is no potential for an acidic leachate to be generated.

(1) Sampling

Obtain a representative sample of the waste to be tested, as per appended instructions. The minimum size of this sample should be 100 grams.

(2) Equipment

- 2.1 A filter holder, 142 mm dia., capable of sustaining a pressure of 5 kg/cm², applied to the solution to be filtered (Nuclepore Stk. No. 425900 or equivalent).
- 2.2 142 mm dia. teflon or membrane filters, 0.45 um dia. pore size (Nuclepore Cat. #2100-0016 or equivalent).
- 2.3 124 mm dia. glass fibre filters (Nuclepore Type P300, Stk. No. 210708 or equivalent).
- 2.4 100 mm dia. vacuum filtration unit.
- 2.5 pre-purified nitrogen gas under pressure.
- 2.6 pH meter, calibrated according to standard procedures.
- 2.7 teflon bottles, wide mouth 500 ml capacity, with teflon caps (Nalge Cat. #2100-0066 or equivalent).
- 2.8 agate or porcelain spheres, 1 cm dia.

(3) Chemicals

- 3.1 0.5 N Acetic Acid

(4) Separation Procedure

If the sample consists of a solid and liquid phase, separate the sample into its component liquid and solid phases.

- 4.1 Following the manufacturer's direction, assemble the filter unit with a filter bed consisting of a 0.45 μm pore size Teflon membrane filter. For difficult or slow to filter mixtures, a pre-filter bed consisting of the following pre-filters of increasing pore size (0.65 μm membrane, fine glass fibre pre-filter, and coarse glass fibre pre-filter) may be used.
- 4.2 Pour the sample carefully into the filtration unit, without undue aeration.
- 4.3 Pressurize the reservoir very slowly with nitrogen gas using the valve on the filter holder until liquid begins to flow from the filtrate outlet, at which point lower the pressure on the filter immediately to 0.5 to 1 kg/sq. cm. Continue filtration until liquid flow ceases.
- 4.4 Increase the pressure step-wise in 0.5 kg/sq. cm increments to 5 kg/sq. cm and continue filtration until the liquid flow ceases or the pressurizing gas begins to exit from the filtrate outlet.
- 4.5 Depressurize the filter unit slowly, remove and weigh the solid material and then transfer it to the extraction apparatus. If the weight is less than 0.5% of the sample, discard the solid portion. Do not allow the material retained in the filter pad to dry prior to the extraction step.
- 4.6 Measure the volume of the liquid phase. The liquid phase is stored under nitrogen conditions at 4°C for subsequent use in Step (5.10) of the extraction procedure.

Note: For mixtures containing non-absorptive solids, where separation can be offered without imposing a 5 kg/sq cm differential pressure, a vacuum filter, employing a 0.45 μm dia. pore size filter, may be used.

(5) Extraction Procedure:

- 5.1 If the original sample consists of solid material, or using the solid material from step (4.5) prepare it for extraction by crushing, cutting or grinding, using the appropriate materials (see "Precautions" following), to pass through a 5 mm mesh opening sieve.
- 5.2 Note: A rubber type of waste may be prepared for extraction by shredding after freezing with liquid nitrogen.

- 5.3 The solid material is quartered and riffled to obtain a sample representative of the waste . If it is required that the structural integrity of the material be determined, it should be subjected to the "Structural Integrity Procedure" as described below .

Do not allow the solid material to dry prior to weighing for the extraction step.

- 5.4 Determine the moisture content of the de-watered sample, by drying suitable aliquot to constant weight at 105°C in an oven.
- 5.5 Place enough of the de-watered undried material in a 500 ml wide mouth teflon bottle to provide 25 g of the dry material.
- 5.6 Add 400 ml of de-oxygenated distilled water.
- 5.7 Measure the pH of the solution, in the teflon bottle, using a calibrated pH meter.

Procedure for Co-disposal Samples

- 5.7.1 If the pH is less than 5.0 ± 0.2 , add 100 ml of deoxygenated water and proceed to step (5..7.3).
- 5.7.2 If the pH is greater than 5 ± 0.2 , add a sufficient volume 0.5 N acetic acid, to bring the pH to 5 ± 0.2 .

Note: No more than 100 ml of the acetic acid may be added during the procedure.

- 5.7.3 Agitate the mixture for 24 hours and maintain the temperature at 20° to 25°C during this time period. It is recommended that the operator monitor and adjust the pH during the course of the extraction either manually or using a pH controller. If a pH controller is not available, the following procedure should be employed:
- (i) Adjust the pH of the solution at 15, 30 and 60 minute intervals moving to the next longer interval if the pH does not have to be adjusted more than 0.5 pH units.
 - (ii) Continue the adjustment procedure for at least six hours.
 - (iii) If at the end of the 24 hour extraction period, the pH of the solution is not below 5.2 and the maximum amount of acid (100 mL) has not been added, adjust the pH to 5.0 ± 2 and continue extraction for an additional four hours, during which time the pH should be adjusted at one hour intervals.

- 5.7.4 At the end of the 24 hour extraction period, add de-oxygenated water as determined by the following equation: $V = 100 - A$ where; V = millilitres de-oxygenated water to be added; A = millilitres of 0.5 N acetic acid added during the procedure.

Note: For the purposes of this test, an acceptable extractor is one which will impart sufficient agitation to the mixture to not only prevent stratification of the sample and extraction fluid but also insure that all sample surfaces are continually brought into contact with well-mixed extraction fluid.

Procedure for Mono-fill Materials

- 5.8 Conduct the extraction procedure using 500 mL of de-oxygenated distilled water and with no pH adjustment.
- 5.9 Separate the material into its component liquid and solid phases as described under the "Separation Procedure".
- 5.10 Analyze the extract and the liquid from step (4.6) separately, for the presence of any of the contaminants listed in Schedule 5 of this interpretation that are suspected of being present.

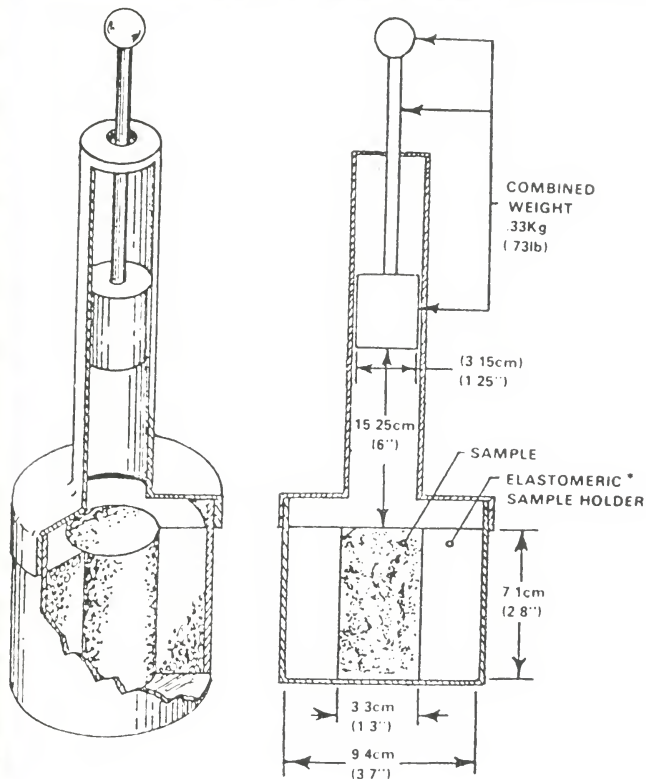
(g) Structural Integrity Procedure

Equipment

A structural integrity tester (Compactor Tester, Figure 1) having a 3.18 centimeter diameter hammer weighing 0.33 kilograms and having a freefall of 15.24 centimeters shall be used.

Procedure

- (a) Fill the sample holder with the material to be tested. If the sample of the waste is a large monolithic block, cut a portion from the block having dimensions of 3.3 centimeters diameter by 7.1 centimeters in length. For a fixated waste, samples may be cast in a form with the above dimensions for the purposes of conducting this test. In such cases the waste may be allowed to cure for 30 days prior to further testing.
- (b) Place the sample holder into the structural integrity tester, then raise the hammer to its maximum height and drop it. Repeat this procedure 15 times.
- (c) Remove the material from the sample holder, weigh and transfer to the extraction apparatus for extraction.



*ELASTOMERIC SAMPLE HOLDER FABRICATED OF MATERIAL FIRM ENOUGH TO SUPPORT THE SAMPLE

Figure 1

COMPACTION TESTER

BILLING CODE 6560-01-C

Table 1

Basis for Listing Hazardous and Site-Specific Waste

Number	Constituent Causing the Waste to be Listed
NA 9301	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethene, carbon tetrachloride, chlorinated fluorocarbons. (T)
NA 9302	Tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-Trichloro-1,2,2- trifluoroethane, ortho-dichlorobenzene, trichlorofluoro- methane. (T)
NA 9303	(I)
NA 9304	Cresols and cresylic acid, nitrobenzene. (T)
NA 9305	Toluene, methyl ethyl ketone, carbon disulphide, isobutanol, pyridine. (I, T)
NA 9306	Cadmium, hexavalent chromium, nickel, cyanide (complexed) (T)
NA 9308	Cyanide (salts) (T, R)
NA 9309	Cyanide (salts) (R, T)
NA 9310	Cyanide (salts) (R, T)
NA 9311	Cyanide (salts) (R, T)
NA 9312	Cyanide (salts) (R, T)
NA 9313	Cyanide (complexed) (T)
NA 9314	Cyanide (complexed) (T)
NA 9315	Cyanide (salts) (R, T)
NA 9307	Hexavalent chromium, cyanide, (complexed) (T)
NA 9316	Pentachlorophenol, phenol, 2-chlorophenol, p-chloro-m-cresol, 2,4-dimethylphenyl, 2,4-dinitrophenol, trichlorophenols, tetra- chlorophenols, creosote, chrysene, naphthalene, fluoranthene, benzo(b)fluoranthene, benzo (a)pyrene, indeno(1,2,3-cd) pyrene, benz(a)anthracene, dibenz(a)anthracene, acenaphthalene (T).
NA 9317	Hexavalent chromium, lead (T)
NA 9318	Hexavalent chromium, lead (T)

NA 9319	Hexavalent chromium, (T)
NA 9320	Hexavalent chromium, lead (T)
NA 9321	Hexavalent chromium (T)
NA 9322	Cyanide (complexed) hexavalent chromium (T)
NA 9323	Hexavalent chromium (T)
NA 9324	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, (T)
NA 9325	Chloroform, formaldehyde, methylene chloride, methyl chloride, paraldehyde, formic acid, chloroacetaldehyde (T)
NA 9326	Acrylonitrile, acetonitrile, hydrocyanic acid (R, T)
NA 9327	Hydrocyanic acid, acrylonitrile, acetonitrile (R, T)
NA 9328	Acetonitrile, Acrylamide (T)
NA 9329	Benzyl chloride, chlorobenzene, toluene, benzotrichloride (T)
NA 9330	Hexachlorobenzene, hexachlorobutadiene, carbon tetrachloride, hexachloroethane, perchloroethylene (T)
NA 9331	Epichlorohydrin, chloroethers, (bis(chloromethyl)ether and bis(2-chloroethyl) ether), trichloropropane, dichloropropanols (T)
NA 9332	1,2-dichloroethane, trichloroethylene, hexachlorobutadiene, hexachlorobenzene (T)
NA 9333	Ethylene dichloride, 1,1,1-trichloroethane, 1,1,2-trichloroethane, tetrachloroethanes, (1,1,2,2-tetrachloroethane and 1,1,1,2- tetrachloroethane) trichloroethylene, tetrachloroethylene, carbon tetrachloride, chloroform, vinyl chloride, vinylidene chloride (T)
NA 9334	Same as NA 9333) (T)
NA 9335	Antimony, carbon tetrachloride, chloroform (T)
NA 9336	Phenol, tars (polycyclic aromatic hydrocarbons) (T)
NA 9337	Phthalic anhydride, maleic anhydride (T)
NA 9338	Phthalic anhydride, 1,4-naphthoquinone (T)
NA 9341	Meta dinitrobenzene, 2,4-dinitrotoluene (T)

NA 9342	Paraldehyde, pyridines, 2-picoline (T)
NA 9343	Toluene diisocyanate, toluene-2,4-diamine (R, T)
NA 9344	1,1,1-trichloroethane, vinyl chloride (T)
NA 9345	1,2-dichloroethane, 1,1,1-trichloroethane, vinyl chloride, vinylidene chloride, chloroform (T)
NA 9348	Hexachlorobenzene, hexachlorobutadiene, hexachloroethane, 1,1,1,2-tetra-chloroethane, 1,1,2,2-tetrachloroethane, ethylene dichloride (T)
NA 9354	Arsenic (T)
NA 9355	Hexachlorocyclopentadiene (T)
NA 9356	Hexachlorocyclopentadiene (T)
NA 9357	Hexachlorocyclopentadiene (T)
NA 9359	Creosote, chrysene, naphthalene, fluoranthene, benzo(b) flouranthene, benzo(a)pyrene, indeno (1,2,3-cd) pyrene, benzo(a)anthracene, dibenzo(a) anthracene, acenaphthalene (T)
NA 9360	Toluene, phosphorodithioic and phosphoro-thioic acid esters (T)
NA 9361	(Same as NA 9360) (T)
NA 9362	Phorate formaldehyde, phosphorodithioic and phosphorodithioic acid esters (T)
NA 9363	Phosphorodithioic and phosphorodithioic acid esters (T)
NA 9364	(Same as NA 9362) (T)
NA 9365	Toxaphene (T)
NA 9367	Hexachlorobenzene, orthodichlorobenzene (T)
NA 9368	2,4-dichlorophenol, 2,6-dichlorophenol, 2,4,6-trichlorophenol (T)
NA 9370	(R)
NA 9371	(R)
NA 9372	Lead (T)
NA 9373	(R)
NA 9374	Hexavalent chromium, lead (T)
NA 9375	Hexavalent chromium, lead (T)

NA 9376	Hexavalent chromium (T)
NA 9377	Hexavalent chromium, lead (T)
NA 9378	Lead (T)
NA 9379	Cyanide, naphthalene, phenolic compounds, arsenic (T)
NA 9380	Hexavalent chromium, lead, cadmium (T)
NA 9381	Hexavalent chromium, lead (C, T)
NA 9383	Lead, cadmium (T)
NA 9384	Lead, cadmium (T)
NA 9385	Lead, cadmium (T)
NA 9386	Lead, cadmium (T)
NA 9387	Lead, cadmium (T)
NA 9388	Hexavalent chromium, lead, cadmium (T)
NA 9390	Mercury (T)
NA 9391	Chloroform, carbon tetrachloride, hexachloroethane, trichloroethane, tetrachloroethylene, dichloroethylene, 1,1,2,2-tetrachloroethane (T)
NA 9349	Aniline, diphenylamine, nitrobenzene, phenylenediamine (T)
NA 9394	Arsenic (T)
NA 9352	Benzene, dichlorobenzenes, trichlorobenzenes, tetrachlorobenzenes, pentachlorobenzenes, hexachlorobenzenes, benzyl chloride (T)
NA 9393	Lead, hexavalent chromium (T)
NA 9397	Phenol, naphthalene (T)
NA 9339	Phthalic anhydride, maleic anhydride (T)
NA 9340	Phthalic anhydride (T)
NA 9346	1,1,2-trichloroethane, 1,1,1,2-tetrachloroethane, 1,1,2,2-tetrachloroethane (T)
NA 9347	1,2-dichloroethane, 1,1,1-trichloroethane, 1,1,2-trichloroethane (T)

NA 9358	Chlordane, heptachlor (T)
NA 9366	Toxaphene (T)
NA 9369	2,4-dichlorophenol, 2,4,6-trichlorophenol (T)
NA 9389	Hexavalent chromium, lead, cadmium (T)
NA 9395	Arsenic (T)
NA 9396	Arsenic (T)
NA 9350	Aniline, nitrobenzene, phenylenediamine (T)
NA 9351	Aniline, benzene, diphenylamine, nitrobenzene, phenylenediamine (T)
NA 9353	Benzene, monochlorobenzene, dichlorobenzenes, 2,4,6-trichlorophenol (T)
NA 9392	Mercury (T)

CHEMICALS UNDER REVIEW

Hazardous

Waste

Number Substance

UR001	Actinomycin D
UR002	Allyl chloride
UR003	2-aminoanthraquinone
UR004	Aminoazobenzene
UR005	0-aminoazotoluene
UR006	4-aminobiphenyl
UR007	3-amino-9-ethyl carbazole
UR008	1-amino-2-methyl anthraquinone
UR009	Anilazine
UR010	Aniline hydrochloride
UR011	o-Anisidine
UR012	o-Anisidine hydrochloride
UR013	Antimony and compounds
UR014	Antimycin A
UR015	Barban
UR016	Bendicarb
UR017	Benomyl
UR018	Benzidine salts
UR019	Beryllium compounds
UR020	Bromoxynil
UR021	2(p-tert-Butylphenoxy)-isopropyl-2-chloroethyl sulfite
UR022	Captafol
UR023	Captan
UR024	Carbaryl
UR025	Carbofuran
UR026	Carbon tetrachloride
UR027	Carbophenothion
UR028	Chloramines
UR029	Chloropyrifos
UR032	Chlorine gas
UR033	2-Chloroethanol
UR034	3-(Chloromethyl) pyridine hydrochloride
UR035	1-(4-Chlorophenyl)-3,3-dimethyl triazene
UR036	4-chloro-m-phenylenediamine
UR037	4-Chloro-o-phenylenediamine
UR038	Chloroprene
UR039	Citrus red no. 2
UR040	Clonitralid
UR041	Cobalt and compounds

UR042	Coumaphos
UR043	p-Cresidine
UR044	Crotoxyphos
UR045	Cycasin
UR046	Cycloheximide
UR047	Demeton
UR048	2,4-Diaminoanisole sulfate
UR049	4,4'-Diaminodiphenyl ether
UR050	2,4-Diaminotoluene
UR051	Diazinon
UR052	Dichlone
UR053	3,3'-Dichlorobenzidine salts
UR054	Dichlorvos
UR055	Dichrotophos
UR056	Diethyl sulfate
UR057	Dinocap
UR058	Dioxathion
UR059	EPN
UR060	2,3-Epoxy-1-propanal
UR061	Ethion
UR062	Ethylene dibromide
UR063	Fensulfothion
UR064	Fenthion
UR065	Fluchloralrin
UR066	2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)-thiazole
UR067	Heptachlor epoxide
UR068	Hexamethyl phosphoramide
UR069	Hydrazobenzene
UR070	Hydroquinone
UR071	N-(2-Hydroxyethyl) ethyleneimine
UR072	Hypochlorite and compounds
UR073	Isonicotinic acid hydrazine
UR074	Ketene
UR075	Lactonitril
UR076	Leptophos
UR077	Lithium and compounds
UR078	Malachite green
UR079	Malathion
UR080	Mestranol
UR081	Methoxychlor
UR082	4,4'-Methylenebis (2-methylaniline)
UR083	4,4'-Methylenebis (N,N-dimethylaniline)
UR084	1,2(Methylenedioxy)-4-propenyl benzene
UR085	Methyl mercaptan
UR086	1-Methylnaphthalene
UR087	2-Methyl-1-nitroanthraquinone
UR088	Mevinphos
UR089	Mexacarbate
UR090	Mirex
UR091	Monocrotaline
UR092	Monocrotophos
UR093	Mustard gas
UR094	Naled
UR095	1,5-Napthalenediamine

